

03/2019

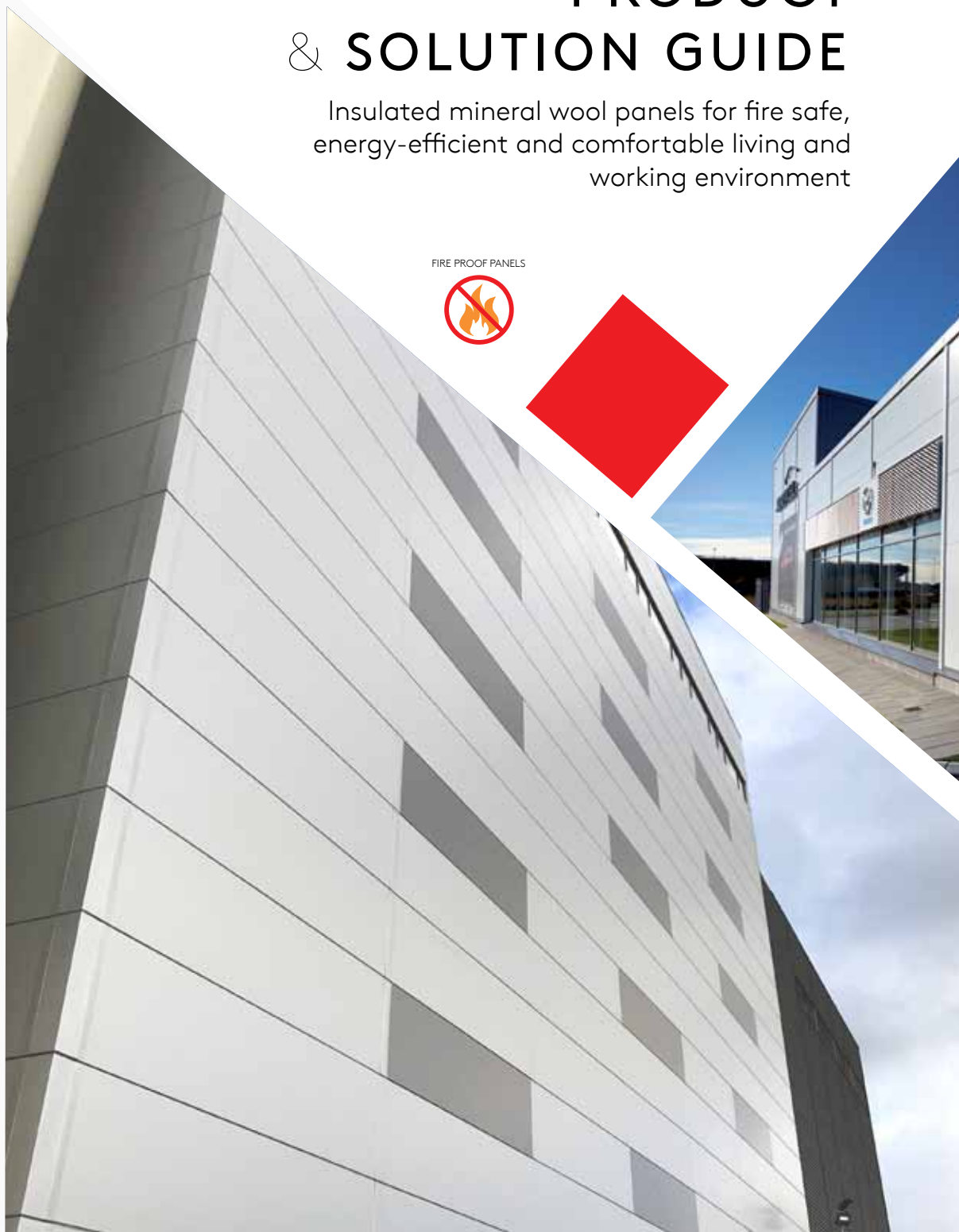
# PAROC

## Panel System

### PRODUCT & SOLUTION GUIDE

Insulated mineral wool panels for fire safe,  
energy-efficient and comfortable living and  
working environment

FIRE PROOF PANELS



**PRODUCT** BROCHURE

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The information in this data sheet describes the conditions and technical properties of the disclosed products, valid at the time of publication of this document and until replaced by the next printed or digital version. The latest version of this data sheet is available on the Paroc Panel System website. Our information material presents applications for which the functions and technical properties of our products have been approved. However, the information does not constitute a commercial guarantee. We do not assume liability for any third party components used in the application or the installation of our products. We cannot warrant the suitability of our products if used in an areas or conditions which are not covered in our information material.





# About us

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## Paroc Panel System

### - over 30 years experience

The whole construction process, from the first customer contact to installation has to be fast, flexible and simple. Our extensive experience in this field helps us to understand construction requirements and solve customer challenges during various phases of a project. Our personnel is up to date with developments in the construction area and can offer customers expertise hot on the trail.

## Products

Paroc Panel System manufactures steel-faced stone wool core sandwich panels for façades, partitioning walls and ceilings. The panels are safe, light-weight, easy to install and elegant in appearance. A finished façade is quickly installed using our panels. The excellent characteristics of our panels include non-combustibility, strength, thermal insulating capacity and tightness.

## Expertise

Behind our high-quality products we have skilled and committed staff offering customer-oriented solutions that are safe, functioning and elegant. We give our business partners added value by being successful and inspiring workplace, where we continuously develop and improve our skills.

We aim to be the most preferred supplier of core stone sandwich panels in future.

## Sales and production

An international network of sales offices and distributors covers almost the whole of Europe and the Middle East. Our largest markets are in Northern and Eastern Europe. Our extensive experience and reputation of a reliable cooperation partner has earned us the position of a market leader in all countries where we operate.

PAROC panels are manufactured in Parainen, Finland. In 2019 we also plan to open a new production line in Lipsko, Poland - to strengthen our position in Eastern and Central Europe. More information on our website: [www.parocpanels.com](http://www.parocpanels.com)

**PAROC**  
Panel System  
*Since 1986*





# General

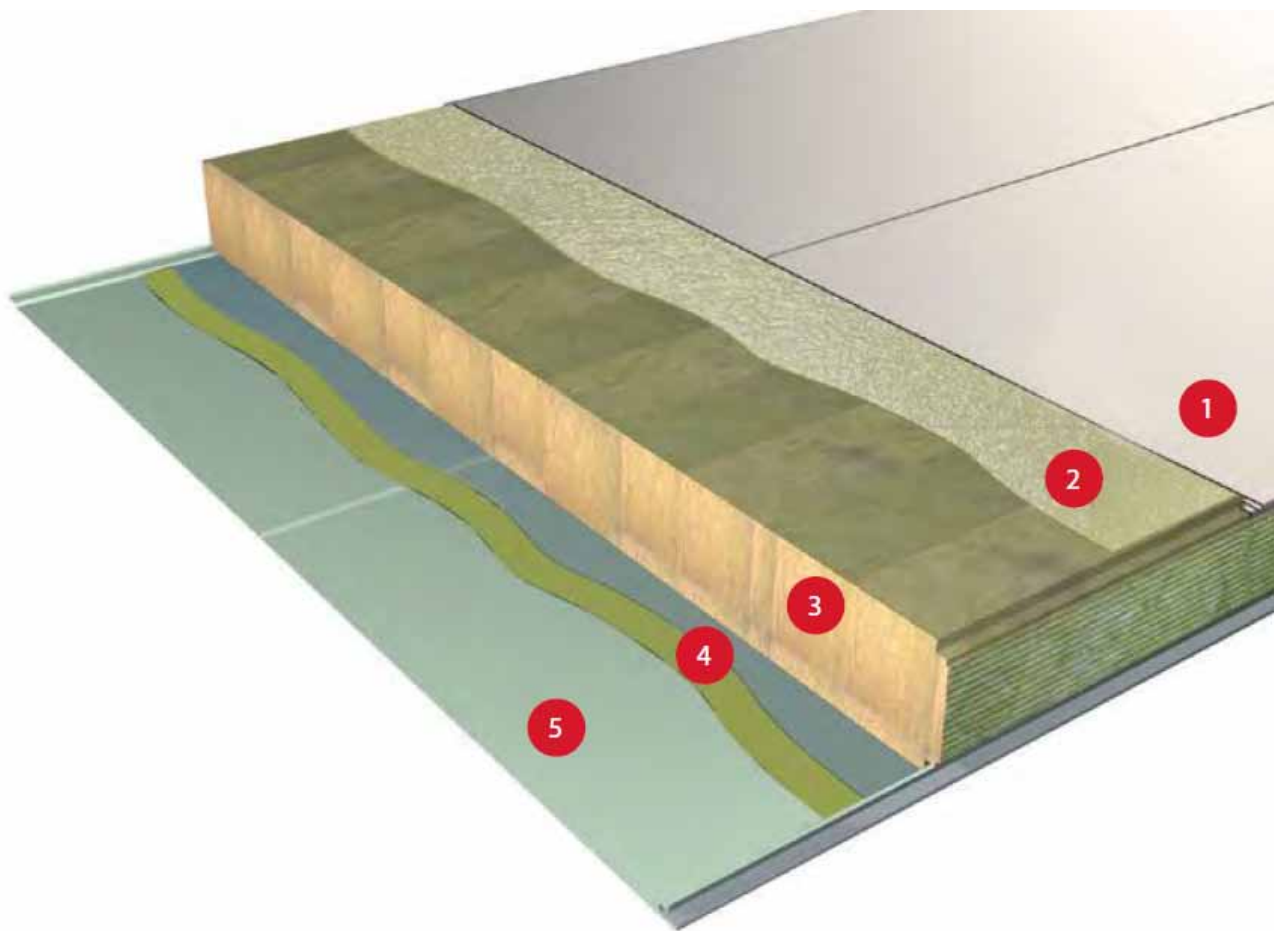
## FIRE PROOF PANELS

PAROC panels are high-class sandwich panels with a core of PAROC structural stone wool. The steel sheet facings act compositely with the AST® wool core to form a high performance structure with all the properties needed for external walls, partitions and ceilings.

We provide solutions for facilities with individual requirements, such as extra fire-safety, hygiene, sensitive, acoustics, and modern architecture. Sandwich panel solutions include everything needed to complete a structure: panels, fixings, flashings, profiles, sealants, lifting equipment as well as first-class technical support.

## Panel Components

Figure 1. Components of PAROC panels.



- 1 Zinc-coated steel sheets with top coating in accordance to environmental demands.
- 2 Specially developed adhesive, that fulfils the AST® quality demands on strength and durability as well as the requirements for non-combustible products A2-s1,d0 for panels, covers the whole surface area.
- 3 Non-combustible (A1) core of PAROC structural stone wool lamellas give equal strength properties in each cross section of the panel.
- 4 Multi-layer primer to ensure the bonding between the adhesive and the zinc layered steel sheet.
- 5 Fire safe joint design that makes the panel tight for hot gases and flames and gives up to 4 hours (EI 240) of fire resistance properties.

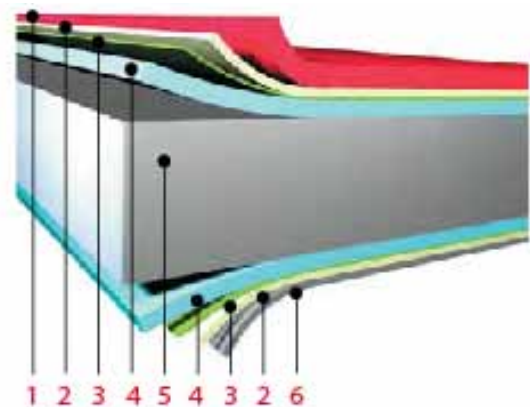
# Panel Facings

PAROC panels have surfaces made of hot dip galvanized, coil coated steel sheet. The two-sided galvanization guarantees the steel corrosion resistance. The primer again ensures a good adhesiveness for the coating. The exposed surface

of the steel has a coil coating and the reverse side consists of a special coating for banding stone wool.

- 1 Coil coating
- 2 Primer
- 3 Passivation layer
- 4 Zinc
- 5 Steel
- 6 Epoxy coating

Figure 2. Facing structure of PAROC panels.



Standard thickness of the coil coated steel sheet is 0,5 and 0,6 mm.

The facing thickness is usually specified as follows:

- in external walls 0,6 mm sheet externally and 0,5 mm internally
- in internal walls 0,5 mm sheet on both sides of the panel
- colings 0,6 mm sheet on the upper side and 0,5 mm on the lower side
- perforated steel sheet for PAROC acoustic panel 0,6 mm
- stainless steel 0,6 mm
- galvanized steel 0,6 mm

Other steel sheet thicknesses are available.

## Insulation Core

The PAROC structural wool is special stone wool in which the wool fibres are uniformly aligned to achieve controlled strength properties. It is specially treated to be water-repellent, non-hygroscopic and non-capillary. In addition, moisture has no effect on the stability of the core and the binder. The PAROC structural stone wool comes in different types.

Powered by



**AST® quality (Advanced Structural Technology) results in secure strength properties, reliable long-term durability and fire safety in sandwich panels. The essential characteristics of AST® quality can not be identified visually, but they can still be measured and controlled during the manufacturing process. AST® quality is fully implemented in PAROC Panel System panels.**



# External Walls

PAROC insulated panels are a reliable choice whenever fireproof material is required to protect life and property. The insulated panels system provides a complete solution for fire resistant facilities or interiors, with non-combustible panels and specially designed details and accessories.

Our wall sandwich panels are based on our Advanced Structural Technology (AST) and high quality PAROC structural stone wool. The panels come in four panel types, each with different technical properties:

**AST® L** - for wall with extremally high thermal insulation requirement

**AST® S** - for normal use in buildings with moderate fire requirements

**AST® F** - for high fire requirements

**AST® E** - for high strength requirements.

Paroc insulated panels are non-combustible, classified in Euroclass **A2-s1,d0** and our structural stone wool core is in **Euroclass A1**. PAROC panel structures meet the requirements for fire resistance up to four hours in walls and up to one hour in ceilings.

## EI-M classified fire wall

EI-M classified fire wall has been tested according to standards EN 1364-1 and EN 1363-2 standards. Classifications **EI-M 90**, **EI-M 120** are available. Contact us for more information:

[panelinfo@parocpanels.com](mailto:panelinfo@parocpanels.com)



## AST® core

The AST® quality has been developed as a tool for you to ensure that the product you are buying meets the most demanding requirements for load-bearing sandwich panels.



## Fire safety

Our non-combustible insulated panels, are classified in Euroclass **A2-s1,d0** and structural stone wool cores in Euroclass **A1**. They meet the requirements for fire resistance up to four hours in walls and up to one hour in ceilings.



- Modular width standard: 1200 mm (cover width 1196 mm)
- Steel thicknesses: 0.5-0.7 mm externally and internally
  - Fire resistance: Up to 240 minutes
  - Reaction to fire: Euroclass A2-s1,d0
  - FM approvals: FM4880, FM4881
  - Long spans



*Saku Arena Tallin, Estonia*



# Internal Walls

We offer also solutions for partition (internal) walls using industry-leading mineral wool insulated panels.

The Paroc panels can be effectively utilised to partition off rooms within an existing structure to create different rooms. The partition panels are strong, light-weight and therefore easy to install. They are available in different thicknesses to allow the creation of different temperatured rooms in the same building.

## Loads for Internal Walls

Internal walls are dimensioned for loads determined by the customer. Load factors, pressure coefficients and partial coefficients for load have to be taken into account in accordance with national regulations. The design load  $S_0$  has to be at least  $0.5 \text{ kN/m}^2$  because

internal walls are often subject to the highest load during the construction phase when the panels are moved and handled on site.

Span graphs for External Wall Panels can be found in our Technical Guide on pages 14-23.

Span graphs for Internal Wall Panels can be found in our Technical Guide on pages 15.

Contact your local Paroc Panel System Technical Department for more details.



Rosvalla Arena Nyköping, Sweden

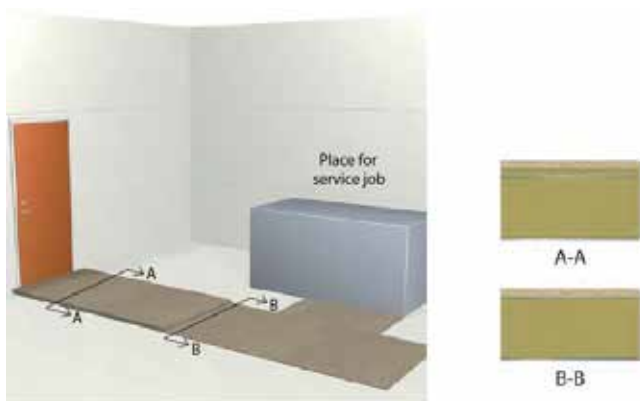
# Ceilings

Our insulated panels are perfect solution for not only external and internal walls, but also for ceilings. We have developed AST® E panel especially for ceilings, but it can also be used for walls with high strength requirements.

Ceilings are divided in two types, non-walk-on ceilings and walk-on ceilings:

- **Non-walk-on** ceilings are dimensioned only for the panel dead weight and possible loads from suspensions in the panels. Walking is not allowed on the ceilings after installation nor the use of the ceiling as support for equipment, ducts etc.
- **Walk-on ceilings** can be dimensioned for the panel dead weight, point load for foot track and uniformly distributed service load of 25 kg/m<sup>2</sup> if no other load information is available.

PAROC panels are not intended to be used as permanent working surfaces, nor are they intended to be used as support for machines, ducts etc. Such devices are to be suspended from a separate load-bearing structure. If the walk-on ceiling has to be protected (see below), the weight of the protection has to be taken into account in dimensioning.



## Protection of walk-on Ceilings

Normal, temporary foot track does not damage the panels. Where heavy foot track occurs, such as ascending spots, doorways and equipment installation locations, the panels should be protected using load-distributing boards on top of 10 - 20 mm thick rigid mineral wool.

For other walkways and installation places a 15 mm thick plywood board protection is enough. Loads from permanent walkways on PAROC ceilings should be transferred to the bearing frame.

Heavy loads, such as blowers etc. applied during installation, have to be checked. The panels and spladders should always be protected during the installation using load-distributing plywood boards.

## Spans for singlespan Ceilings

Panel type AST® E is always used in ceilings.

Table. *Spans for PAROC panel type AST® E in walk-on and non-walk-on ceilings. These values are also valid for PAROC acoustic panels when the perforated surface is downwards.*

- loads according to section 2.4.1
- upper steel sheet 0.6 mm and lower steel sheet 0.5 mm
- support width 40 mm
- temperature gradient over the panel 0 °C
- max. deflection L/200

Cut-outs in the ceiling weaken the panel strength. Foot track close to cut-outs should be avoided.

Ceiling type	Maximum span, m									
	Panel thickness, mm									
	50	80	100	120	150	175	200	240	240	
Walk-on	3,7	5,1	6,1	7,0	8,1	8,9	9,8	10,6	10,9	
Non-walk-on	4,4	6,1	7,3	8,3	9,6	10,5	11,4	12,0	12,0	

# Product Properties

## External Walls & Partitions

Panel type	Panel property	Nominal/Actual Thickness, mm								
		50/53	80/79	100/99	120/120	150/151	175/173	200/202	240/243	300/305
AST®L	U-value, W/m²K <sup>(1)</sup>	-	0,45	0,37	0,30	0,24	0,21	0,18	0,15	0,12
	Fire rating, horizontal/vertical, min <sup>2)</sup>	-	-	-	-	EI120/EI180	EI120/EI180	EI120/EI180	EI120/EI180	EI120/EI180
AST®T	U-value, W/m²K <sup>(1)</sup>	-	0,47	0,38	0,31	0,25	0,22	0,19	0,16	0,12
	Fire rating, horizontal/vertical, min <sup>2)</sup>	-	EI30/EI30	EI45/EI45	EI60/EI90	EI60/EI120	EI180/EI180	EI180/EI180	EI240/EI240	EI240/EI240
AST®S	U-value, W/m²K <sup>(1)</sup>	-	0,48	0,38	0,32	0,26	0,22	0,19	0,16	0,13
	Fire rating, horizontal/vertical, min <sup>2)</sup>	-	EI30/EI30	EI60/EI60	EI90/EI90	EI180/EI180	EI180/EI180	EI240/EI180	EI240/EI240	EI240/EI240
AST®S+	U-value, W/m²K <sup>(1)</sup>	-	0,48	0,38	0,32	-	-	-	-	-
	Fire rating, horizontal/vertical, min <sup>2)</sup>	-	-	EI120/EI120	EI120/EI120	-	-	-	-	-
AST®F	U-value, W/m²K <sup>(1)</sup>	-	0,53	0,43	0,36	0,29	0,25	0,22	0,18	0,18
	Fire rating, horizontal/vertical, min <sup>2)</sup>	-	EI45/EI90	EI45/EI120	EI45/EI120	EI240/EI240	EI240/EI240	EI240/EI240	EI240/EI240	EI240/EI240
AST®F+	U-value, W/m²K <sup>(1)</sup>	-	-	0,43	0,36	-	-	-	-	-
	Fire rating, horizontal/vertical, min <sup>2)</sup>	-	-	EI120/EI120	EI120/EI120	-	-	-	-	-
AST®E	U-value, W/m²K <sup>(1)</sup>	0,77	0,53	0,43	0,36	0,29	0,25	0,22	0,18	0,18
	Fire rating, horizontal/vertical, min <sup>2)</sup>	EI45/EI45	EI45/EI90	EI45/EI120	EI45/EI120	EI240/EI240	EI240/EI240	EI240/EI240	EI240/EI240	EI240/EI240

## Ceilings

Panel type	Panel property	Nominal/Actual Thickness, mm								
		50/53	80/79	100/99	120/120	150/151	175/173	200/202	240/243	300/305
AST®E	U-value, W/m²K <sup>(1)</sup>	0,77	0,53	0,43	0,36	0,29	0,25	0,22	0,18	0,14
	Fire rating, ceilings	NPD	NPD	EI 60	EI 60	EI 90	EI 90	EI 90	EI 90	EI 90
	Weight, kg/m² <sup>3)</sup>	16	19	22	24	28	31	34	39	47

NPD = no performance determined (not tested)

- = not available

1. U-values including surface resistance R<sub>si</sub> + R<sub>se</sub> = 0.17 m²K/W and the influence of joints.

2. Structure design and allowed spans according to the Design Guideline. PAROC acoustic panels do not have a fire endurance classification, PAROC print and PAROC art panels have been classified in Euroclass C-s1,d0. Additional information regarding details and allowed spans is available from the Paroc Panel System technical support.

3. Valid for standard surface panels.



# Acoustic Panel - Wall & Ceiling

Noise generated by machinery and equipment in industrial plants often makes the work environment unpleasant and even harmful. To solve the problem, we propose to separate people from the machinery by building sound-insulated machine rooms and control rooms or acoustic screens.

With perforated PAROC Panel System acoustic panels, you ensure sufficient sound attenuation and insulation. Along with the sound control you get stylish finished surfaces for interior purposes.



They can be used in internal walls and ceilings. They can be used in normal dry internal climatic conditions. Note that when acoustic panels are used as ceilings, the perforated surface is always on the lower side.

In acoustic applications, you can use both - ordinary PAROC insulated panels and one side perforated PAROC acoustic panels.

## Weighted sound reduction at various noise spectra - AST® S

Panel thickness, mm	Sound reduction, dB		
	R <sub>w</sub>	R' <sub>w</sub> +C	R' <sub>w</sub> +C <sub>tr</sub>
50*AST E	31	28	28
80	30	27	25
100	30	27	25
120	30	27	25
150	30	27	25
200	29	28	26
240	29	28	26

Use R'<sub>w</sub>+ C for:

- Train noise at high and medium speed
- Road traffic over 80 km/h
- Jet noise at short distances
- Industrial noise (medium and high frequency)

Use R'<sub>w</sub>+ C<sub>tr</sub> for:

- Street traffic noise
- Train noise at low speed
- Jet noise at long distances
- Industrial noise (low and medium frequency)

## Span - Internal Walls

Panel thickness (mm)	50	80	100	120	150	175	200	240
Allowed span 50C (m)	5,3	6,5	7,3	8,0	9,0	9,7	10,5	11,3
Allowed span 75F (m)	6,0	7,8	8,7	9,6	10,8	11,2	11,6	11,9

Internal Walls are dimensioned for load of 0,3 kN/m<sup>2</sup>

## Span - Ceilings

Panel thickness (mm)	50	80	100	120	150	175	200	240
Allowed span 75F (m)	3,5	5,0	5,9	9,8	7,9	8,7	9,6	10,7

Ceilings are dimensioned for a point load of 1,2 kN/ and uniform load of 0,25 kN/m<sup>2</sup>

# Flashings & Ancillary Products

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PAROC Panel System offers a wide range of versatile accessories, including fasteners for fixing the panels and flashings, profiles, flashings as well as sealants. The accessory range includes the following items:

- **Flashings**
- **Screws** for fixing panels to steel, wood or concrete frames
- **Spikes** for fixing panels to concrete frames
- **Drills**
- **Profiles** for panel fixing and window installations
- Screws and **rivets** for flashing fixing
- Various **sealants** for sealing foundations, frames, joints and flashings
- **Insulation strips** for joints and insulation board for fire protection of fixings

Design your project according to our standard details so that we can, along with your panel order, provide an overall estimate of the quantity of accessories needed in your project.

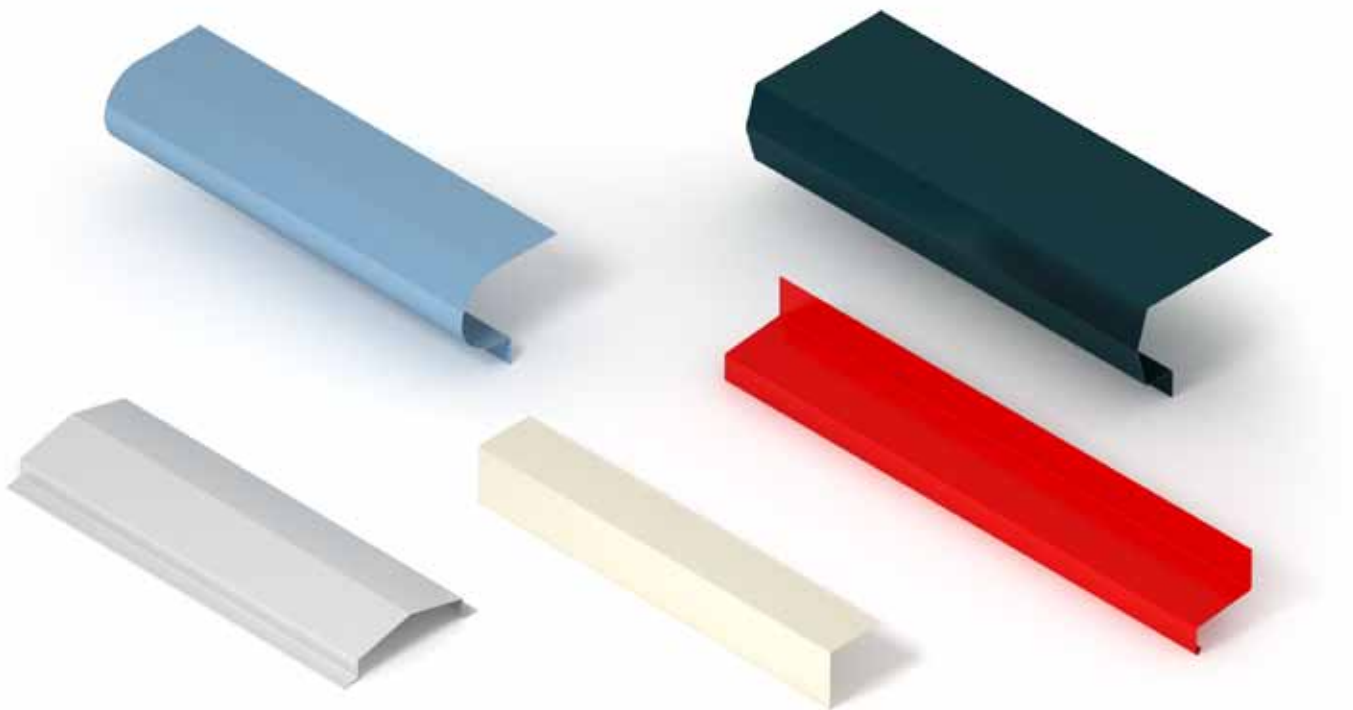
Standard CAD/DWG details can be found on our website in **Download** section:



*Design Flexibility*

## Flashings characteristics:

- Manufactured from the same high-quality materials as panels
- Available in long lengths
- Flashings according to our details
- Delivery together with panels
- Architectural *Delign* - discrete hidden fixing system



# Special Components

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## Preformed insulated corners and shaped modules

PAROC Panel System shaped modules set your creativity free. They give you more aesthetic possibilities as well as challenge you to explore and express yourself freely. Paroc Panel System's shaped modules support all your architectural design needs and give your facade a finished look.



### Corner Panels

PAROC corner panels form sharp corners without any flashings. For horizontal installation. Corner panels can be made from all PAROC panel models.

#### Dimensions

- Panel thickness: 50-200 mm
- Max. length L1 + L2 : 10 500 mm
- Min. arm length: 100 mm
- Corner angle: 90-180 °

For additional restrictions, please contact Paroc Panel System.

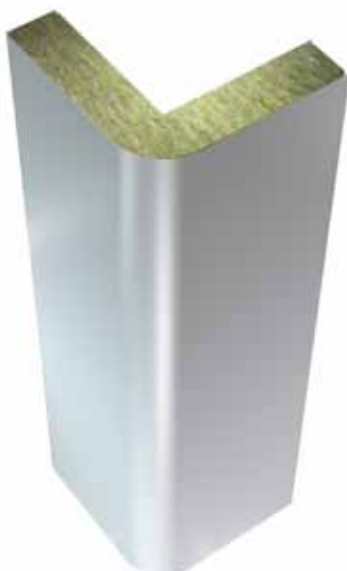
### U-shape Panels

PAROC U-panels have sharp corners. Use them for a range of applications, such as to cover bearing structures. For horizontal installation. U-panels can be made from all PAROC panel models.

#### Dimensions

- Panel thickness: 50-200 mm
- Corner angle: 90-180 °

For additional restrictions, please contact Paroc Panel System.



### Rounded Corner Panels

PAROC rounded corner panels smoothen the shape of a building and combine the corners to the facade. For vertical installation. Rounded corner panels can be made from all PAROC panel models.

#### Dimensions

- Panel thickness: 50-200 mm
- Max. length: 10 500 mm
- Corner angle: 90-180 °
- Bending radius: Panel thickness

For additional restrictions, please contact Paroc Panel System.



# Shaping your vision



## Rounded U-Corner Panels

PAROC rounded U-panels bring variety to a facade. Use them, for example, to create rhythmic shapes in facades with an external frame. For vertical installation. Rounded U-panels can be made from all PAROC panel models.

### Dimensions

- Panel thickness: 50-200 mm
- Max. length: 10 500 mm
- Bending radius: Panel thickness

For additional restrictions, please contact Paroc Panel System.

## Rounded Bevelled Panels

PAROC bevelled panels allow the use of very narrow flashings in corners. They are for horizontal and vertical installation and can be made from all PAROC panel models.

### Dimensions

- Panel thickness: 50-200 mm
- Max. length: 10 500 mm
- Bevel angle:  $0 \pm 45^\circ$

For additional restrictions, please contact Paroc Panel System.



# Coatings & Colours

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**Standard surface coatings are PVDF and PE (polyester).**

To be used especially in high temperature interiors galvanized steel sheet with no substrate coating. In case of high hygiene requirements the FoodSafe surface coating or different types of stainless steel sheet can be chosen.

- **Coating external:** PVDF, Polyester or matte PVDF
- **Coating internal:** Polyester or FoodSafe/ Stainless steel for hygienic applications
- **Colours:** Standard and special

## PVDF coating for external facings

The PVDF coating is recommended for normal external use. It is highly resistant to UV radiation and dirt. PVDF is recommended for uses where the coating needs colour durability and dirt resistance. Even matt PVDF is available in some colours.

## Polyester coating for internal facings

The polyester coating is suitable for both interior and exterior use, though its properties are better suited for interior use. In the food industry polyester can be used in structures that do not come in direct contact with unpacked foodstuff.

There are also other steel coatings available on request, to meet building design & use requirements. Please contact local Paroc Panel System office to get detailed information.



# Colouring your design

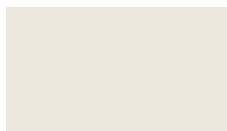


*Hills Homemaker Centre New South Wales, Australia*

## Colour indications for PAROC Panel System

### STANDARD COLOURS

Bright white  
FoodSafe 0,5/0,6



RR20 White  
PVDF 0,6 / Polyester 0,5/0,6/0,7



RR29 Red  
PVDF 0,6



RR21 Light grey  
PVDF 0,6 / Polyester 0,5/0,6



RR40 Metallic silver  
PVDF 0,6



RR41 Metallic dark silver  
PVDF 0,6



RR23 Dark grey  
PVDF 0,6



RR45 Metallic graphite  
PVDF 0,6



R288 Grey  
PVDF 0,6

R106 Pure white  
PVDF 0,6 / Polyester 0,5/0,6/0,7



R143 Grey white  
PVDF 0,6 / Polyester 0,5/0,6



RR35 Blue  
PVDF 0,6



R2B1 Grey  
PVDF 0,6



RR40 Metallic silver  
Matt PVDF 0,6



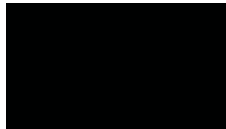
RR41 Metallic dark silver  
Matt PVDF 0,6



RR23 Dark grey  
Matt PVDF 0,6



RR45 Metallic graphite  
Matt PVDF 0,6



RR33 Black  
PVDF 0,6



### SPECIAL COLOURS

R807 Light ivory  
PVDF 0,6



RR24 Yellow  
PVDF 0,6



R750 Tile red  
PVDF 0,6



RR42 Metallic gold  
PVDF 0,6



RR34 Light blue  
PVDF 0,6



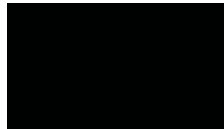
R502 Green  
PVDF 0,6



RR37 Green  
PVDF 0,6



RR32 Dark brown  
PVDF 0,6



RR33 Matt black  
PVDF 0,6



RR30 Light brown  
PVDF 0,6



RR26 Yellow  
PVDF 0,6



RR43 Metallic copper  
PVDF 0,6



RR22 Grey  
PVDF 0,6



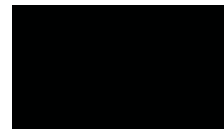
RR44 Metallic blue  
PVDF 0,6



RR36 Light green  
PVDF 0,6



RR11 Spruce green  
PVDF 0,6



RR46 Metallic black  
PVDF 0,6



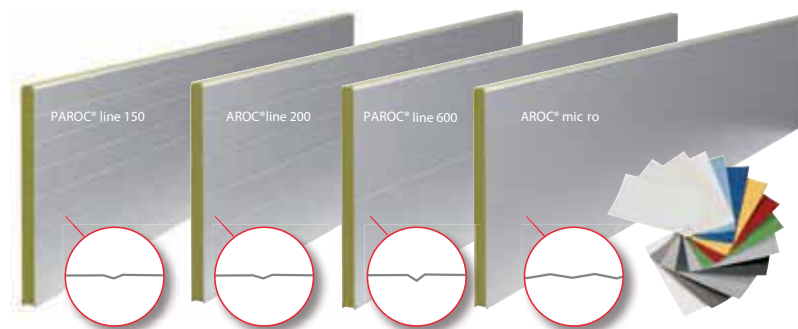
\* Please check our websites to be sure you have got the most up to date information

# Surface Structures

The façade solutions have been and will be further developed by listening to views of architects and structural designers. We also utilize the skills of top industrial designers. Thus we can continue to offer continuously improved methods to combine our panels with more and more individual surfaces.

## Profile options for Paroc Panels

### PAROC Line/Micro Line



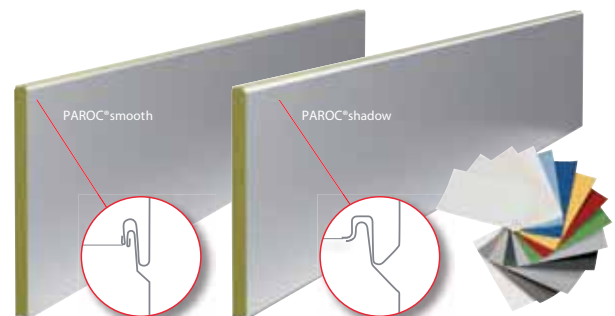
PAROC Line – the visual expression of the panels is formed by the continuous lines which create a streamline effect. PAROC line 150, 200 and 600 give rhythm to the wall surface.

### PAROC Micro



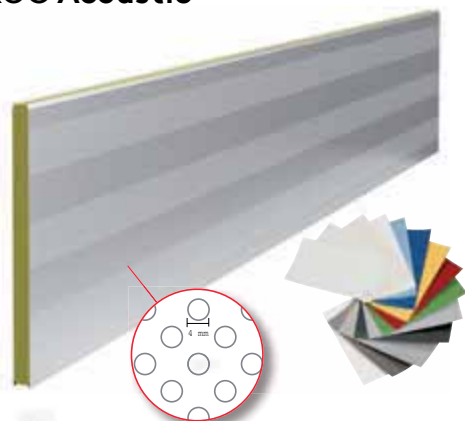
PAROC Micro – will most likely be a common sight to you and adorns buildings up and down the country, and is one of our most popular profile by far. Micro may be combined with Line 200 and Line 600. Combination of micro and line is possible

### PAROC Smooth



PAROC Smooth – the secret lies in its smoothness! A smooth wall surface is beautiful and sound. If, on the other hand, you want to bring forward the play between light and shadow in the panel joints, your choice is PAROC shadow.

### PAROC Acoustic



PAROC Acoustic – one surface of the acoustic panel is perforated. The panels have good sound attenuation and are intended for partition walls and ceilings to create elegant and silent interiors.





## PAROC Print

PAROC Print panel brings back art and ornamentation to architecture.  
Print any pattern you want on PAROC print panels.

Plenty of options

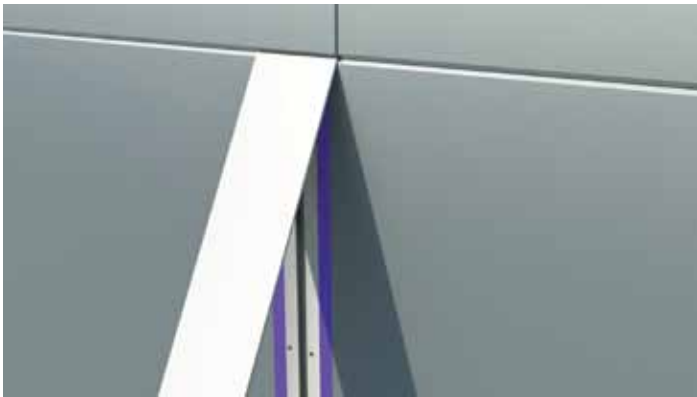


*Europcar Logistic Centre Vantaa, Finland*

# Architectural DELIGN

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PAROC Delign is an innovative sandwich panel system that can be used to fade out the vertical joints typically found on facades of prefabricated buildings. Continuous horizontal joints crossing over the element's vertical joints offer a whole new world of visual possibilities for facade construction.



## Concept in brief

*Including panels, fixings, seals and flashings.*

Paroc Shadow sandwich panels with stone wool core and steel surface, with a deep panel joint. The thickness on a facade varies between 120 and 300 mm.

However, the most remarkable innovation in the PAROC Delign concept is the user friendly mounting and flashing system. The panel fixings remain hidden underneath the surface flashing and the vertical seams of a building blends in much better with the rest of the facade.



One of the key benefits of the PAROC Delign concept is the speedy installation. For instance, no tinsmiths are required for the installation.

We have compiled the main elements of the installation process in the attached animation. These tips are meant for experienced panel installers.



Learn more about this unique architectural system visiting our website

When comes to design,  
sky is the limit



Martin & Servera, Bromma, Sweden



# PAROC Reface

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## Renovation with Paroc Reface

PAROC Reface is an entirely new concept for renovations. It significantly reduces the time required for renovations because you do not need to remove old walls to begin with. Additionally, the use of the property can continue practically uninterrupted during panel installation. These factors all help reduce the total cost of the renovation.



### Installation directly on top of an existing facade

The innovative Reface panel is mounted directly on top of an old wall structure. Reface's outer surface is like any other modern sandwich panel. Its core is fire safe PAROC stone wool, providing good insulation properties. The internal steel sheet is breathable, or open to diffusion, allowing for a substantially faster installation process to speed up any renovation.



PAROC REFACE is an ideal solution for quick and cost effective renovation of:

- Warehouses
- Halls
- Industrial buildings
- Production facilities
- Offices

Panel thickness range: 50-300mm



Download PAROC REFACE Installation Guide





## PAROC Reface projects - before and after

### Såma AB

Before



After



### Kiwi Skien

Before



After



### Lobas Osterøy

Before



After

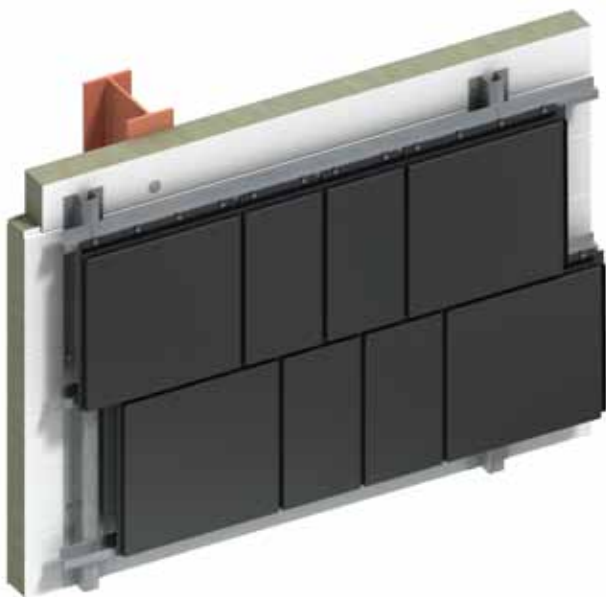




Dri-Design non-combustible rainscreen facade installs at least twice as fast as comparable systems and can be direct fix or form a ventilated cavity. The rainscreen cassette comes in three variations plus can be perforated. Stackbond or Stretcher Bond patterns, horizontal or vertical orientation, designers

can achieve patterns that are easily interchangeable without the need for complicated rail and bracket systems.

Dri-Design is available in a wide range of colours, finishes, textures and five different natural metals.



## The revolution in Rainscreen Facades!

- Installs twice as fast as comparable systems (hoc)
- Minimum components
- High quality aesthetic
- Wide range of colours and finishes, textures, metals
- Cassettes types and size easily interchanged
- Self-draining gutter, no streaks, low maintenance

## Dri-Design - one cassette many different options

By altering the depth to one or more edges , texture and form are easily added to a design.

**Metals available:** Auminium, Copper, Corten, Stainless Steel, Zinc

### Dri-Design Flat

Dri-Design Flat can be used on its own and is easily interchanged with the other Dri-Design options. No sealants, gaskets or butyl tape in the cassette joints, means no dirty streaks or legacy of maintenance for the building owner.



### Dri-Design Tapered

Dri-Design Tapered cassettes can be angled in any direction with varying depths and degree of slope, without the need to modify the substrate or weather barrier.



### Dri-Design Perforated

By varying the size, location and density of perforations, areas of light, dark and shades in between are created to form an image. These perforations also allow the cassette to provide needed airflow and/or shade to a structure.



### Dri-Design Shadow

Used alongside Dri-Design Flat, individual Shadow cassettes can be extended at varying depths to create texture or a dynamic variation in patterns.





# Our Services & Support

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Paroc Panel System is the leader in its field not by chance. An important part of our success is our customer-oriented staff. We listen to builders and

designers and use their needs and wishes as a platform for improving our operations and service, new products and solutions.



## Sales Team

Our skilled sales staff help building professionals to find the best possible solutions to their specific projects. Our project engineers ensure a smooth implementation of the projects according to the agreement.

## Project Managers

When deal is made our project engineers continue practical work on the project to make it flow fluently on schedule in every detail.



## Technical Support

Our technical experts offer guidance in the design and selection of architectural and functional structural solutions. Standard and special details in AutoCAD format speed up design work and make installation easier.

## Operations & On-Time Deliveries

Our reliable and flexible operations save time and money for our customers. Every link in our delivery chain is secure. We understand the challenges of time schedules in modern building, we listen to our customers and we continue to improve our services to further ensure the smooth running of building projects.





# Technical Documentation

PAROC Panel System offers a wide range of support for your insulated panels projects. From project design and engineering to installation use and maintenance.

## BIM/CAD files and Technical Guide

With free PAROC Panel Design applications you can create BIM objects for Revit and ArchiCAD modelling. You can download our free CAD/DWG files for different types of application from our website. The Technical Guide for PAROC panel solutions advises on the design and span dimensioning of PAROC Panel structures.



All of them you can find on our website:  
**[www.parocpanels.com](http://www.parocpanels.com)**



## Installation Manuals

Detailed installation instructions and detail drawings, appropriate accessories and installation start-up guidance make installation quicker. Even tough weather conditions do not prevent installing.

Download PAROC Panel  
**Installation Guide** from  
our website



## Use & Maintenance Guide

Paroc Panel System provides guidelines for using and maintaining buildings built with our panels. The guidelines cover the following subjects: panel in use, cleaning, painting, repairing and exchanging of panels. Maintain the panels according to the guidelines to ensure a longer service life for the panels.



Download **Use & Maintenance Guide**  
from our websites:



# Installation Guide

## WORK SAFETY

Wear protective gloves and clothing when handling the panels, edges and sharp corners.

The lifting slings included in the panel package when ordered are disposable and should be used only once when unloading the packages.

Always check that the lifting slings are in order and firmly attached. Be sure that there are no people below the lifted package. Strong wind may prevent installation. Always carefully follow the safety instructions accompanying the LiftAids.

Before installation work, check if the installation site is subject to any particular requirements regarding occupational safety. Always follow the local occupational safety provisions.

## ADDITIONAL INFORMATION

For more detailed information make yourself familiar with the following material on our website <https://www.parocpanels.com/en-gb/support/installation>

### Details

PAROC panels have to be installed in accordance to the project specific details.

### LiftAids

We have developed special lifting equipment for panels. They are on rental basis and are to be ordered well in advance. LiftAid types and instructions can be found on our website.

## PREPARATION

### Fasteners

Before starting installation check that the correct fasteners have been specified and supplied for the actual frame type and strength, e.g. the concrete strength is adequate and the steel thickness is correct for the intended screws. Also check the number of fasteners in the dimensioning documents. The fasteners must not be tightened too much to avoid dents around them. Use, for example, a screwdriver with depth limiter.

### Details

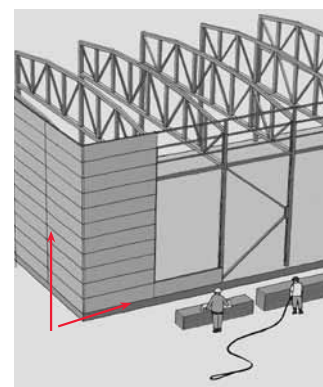
To ensure the quality and functionality of the total construction, details and specifications have to be followed correctly. Fasteners, fire and thermal insulation and flashings etc. have to be carefully installed according to the project specification.

### LiftAids

Contact Paroc Panel System beforehand to rent required lifting equipment. LiftAids are presented on our website, see address to the left.

### Installation direction

Unless otherwise agreed the panels are packed in the installation direction from left to right. In vertical installations, the panels are normally installed with the male joint in the installation direction as shown in the installation drawing. Small colour variations may for coating-technical reasons appear between different delivery batches of the panel coating material. If a specific installation order has not been provided, panels should be installed in delivery order.



### YOU WILL NEED

✓	Drilling machine and screw driver with depth limiter and 8 mm socket (0-2000 rpm, torsion moment 1900 Ncm)
✓	Jigsaw and/or circular saw with hard-metal blade for steel sheets
✓	Plate cutter, folding tongs and pop rivet tongs
✓	Installation drawing and panel package list
✓	LiftAid, to be rented from Paroc Panel System; to be ordered well in advance
✓	Levelling tools, builder's level, plumb line and measuring tape
✓	Sealant gun for joint compound
✓	Electrical supply
✓	Crane or forklift (approx. 2 tonnes) for unloading, and lifting crane, telescope forklift, scissor lift or forklift for installation depending on the lifting method. The fork width is min. 800 mm and max 1400 mm.
✓	Protective cover for open panel package

### CHECK LIST

#### Before installation:

✓	Sufficient storage space for packages available
✓	Sufficient working space around the framework
✓	Framework ready, support widths adequate, and tolerances acceptable
✓	Local safety instructions to be observed

#### During installation:

✓	Female joints are clean and open
✓	Panel sealant is in order
✓	Panel cores are tightly pressed together
✓	Screws are not tightened before the following panel is in place
✓	Required support width is maintained during installation, min. 50 mm

# At the building site

## Location of packages

Unload the packages one at a time and place them on an even foundation near the installation site using the installation drawings and package list as a reference. Turn the male joint towards the building. Do not stack packages on top of each other.

## Unloading

1. When unloading with help of a forklift, lift only one package at a time.

The packages have to be lifted inside the EPS forklifting foot, see picture below. The fork width is min. 800 mm and max. 1400 mm.

Don't put other loads on top of the panel packages, this may scratch the finished panel surfaces.

If the panels have to be loaded on top of each other, check that the EPS support feet are free from stone and other sharp-edged objects.

2. When unloading the panels using a crane, lifting slings must be ordered in advance.

Before lifting, check that the lifting slings are in order and that the package is in balance. Please note that the lifting slings are disposable and should be used only once when unloading panels from a trailer. Be sure that there are no people below a lifted package.

## Acceptance control

Check that the quantity and dimensions of the panels correspond to the packing list and installation drawing. Also check for possible transport damage immediately and, in case of damage, directly make remarks on the bill of freight and submit a written report to Paroc Panel System.

## Handling of panels

The PAROC panel is a sandwich structure where the core and facing act as a composite. To ensure the panel strength it is essential not to cut one of the panel facings. The panels are supplied with finished surfaces and therefore have to be handled with care. If panels are delivered with a protective film it has to be removed right after installation.

To avoid scratches and other damage during installation, always use foam sheets between the panel surfaces. Scratches on panels from handling and installation have to be repaired as soon as possible according to instructions in Use and Maintenance Guide (see page 2). If welding or using an angle grinder near panels, the

panel surfaces must be protected. Cover opened panel packages when finishing work for the day.

## Panel cutting and penetrations

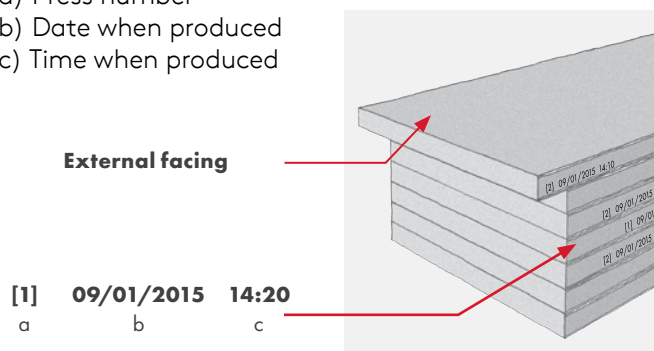
Openings and cut-outs may be required on site. Please note that large openings may weaken the panel strength and affect the fire resistance properties of the structure. The static calculation of the panel is made only for the openings included in the installation drawing. Use a jigsaw for small cut-outs and cuts that are not straight. Long cuts may require a circular saw. Do not use an angle grinder to cut the panels, as it will damage the coating. Brush splinters off the panel surface, as remaining debris will discolour the surface.

## Panel identification

The laser printed panel identification code is placed at female side on the panel wool, when you read the numbers right way, the steel sheet above the numbers is External facing.

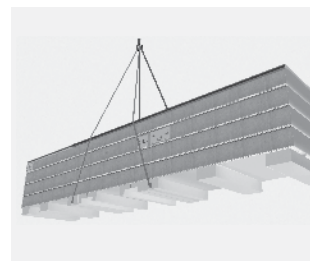
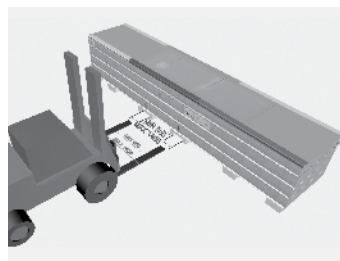
The marks on the wool are:

- a) Press number
- b) Date when produced
- c) Time when produced

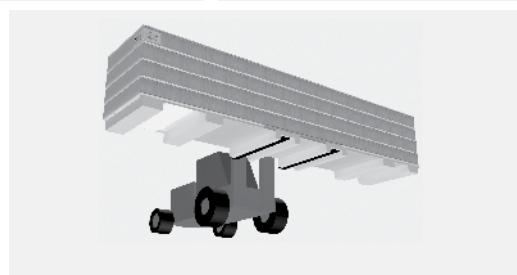


If both facings are of the same colour but with different coating, always ensure that the panel is correctly installed by checking the installation drawing.

More information on the panels and their surfaces can be found in the package label.



PANEL WEIGHTS, KG/RUNNING METRE									
Panel type	Panel thickness (mm)								
	50	80	100	120	150	175	200	240	300
AST® T	17	19	20	23	25	28	30	34	40
AST® S	18	20	23	25	28	29	34	38	45
AST® F	19	23	25	29	32	36	40	46	55
AST® E	19	23	26	29	34	36	41	47	56



# HORIZONTAL INSTALLATION OF EXTERNAL AND INTERNAL WALLS

## Levelling

The panels are to be installed horizontally aligned. Take levels of the foundation in order to find the highest point. Mark this height on the external side of the frame and use the height marks when installing the panels.

## Foundation

Apply foundation sealant 1) and install a U-channel on the foundation 8 mm off the frame. Fix the U-channel at 600 mm centres, seal channel joints and fill the channel with a stone wool strip, if possible in connection with the panel installation. Install the foundation flashing with 100 mm overlap using sealant in the overlap. packages when finishing work for the day.

## Frame sealant

In external walls, apply sealant 2) (strip or compound) to the framework so that the panel fasteners remain outside the sealant.

## Installation of panels

Lift the panel into the right position using a LiftAid. Steer the panel using the steering line fixed to one end of the panel. Also remember to fix the safety line around the panel.

Panels intended for external walls are delivered with a factory-installed rubber sealant 4) Check that this sealant is intact in order to ensure correct functioning of the wall. The joint with the sealant has to be turned towards the warm side of the building, normally inwards. In extreme weather conditions panels are delivered with sealant in the outer groove of the joint as well. Press the panel tightly against the framework using a quick grip. The frame sealant has to be compressed at least 30%

## Fixing of panels

Fix the panel using appropriate fasteners, minimum 20 mm from the panel end. Leave the screws near the male joint open till the next panel is installed. The screws must not be too tight, use a screwdriver or drilling machine with depth limiter. The correct number of fasteners can be found in the dimensioning documents. To ensure tightness, apply sealing compound 3 to the parts of internal and external panel joints that will be covered with flashings, see detail drawings.

Lift the next panel in position. Check that panel core and joints are pressed properly together.

## Insulation of panel ends

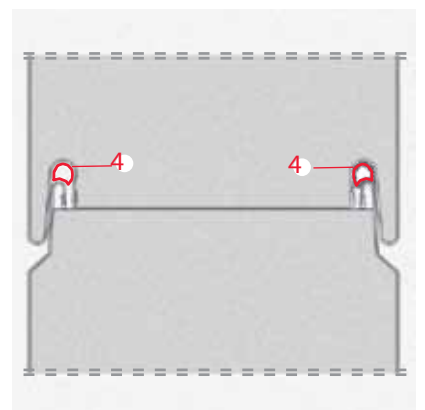
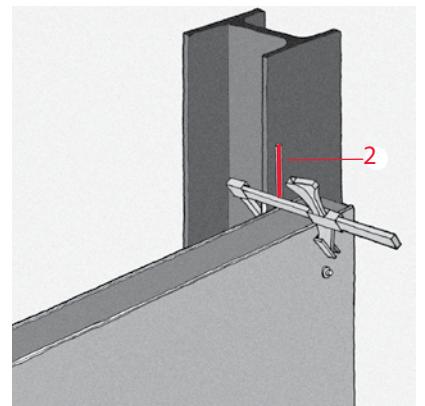
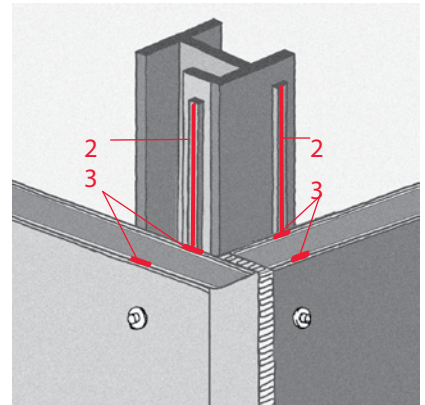
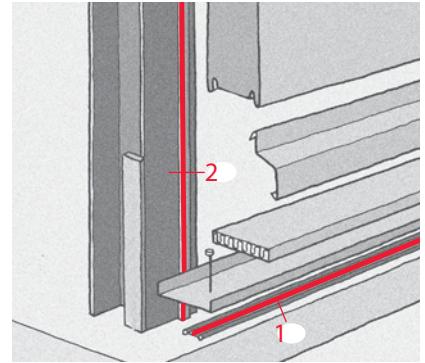
Use stone wool strip in the panel end joints before installing flashings.

## Sealing

Use sealing compound on the inside of the panel to seal screw holes and other cut-outs to maintain the vapour barrier function.

## NOTE!

- The safety instructions accompanying the LiftAids must be observed.
- Strong wind may prevent installation.
- In fire-rated walls, use steel rivets and flashing screws.
- Cover open wool surfaces of panels against rain and snow when finishing work for the day.





# VERTICAL INSTALLATION OF EXTERNAL WALLS

## Foundation

Check the panel spacing and installation sequence. Plumb, apply foundation sealant 1) install the foundation profile and seal profile joints. Apply sealant 2) on foundation profile and on the upper support structure. Apply a stone wool strip on the foundation profile.

## Installation of panels

Install the panels with the male joint in the installation direction in accordance with the installation drawing. Sealant is applied on-line in the internal and external female joint of the vertically installed panel. Check that it is intact in order to ensure the correct functioning of the wall. Lift the panel in position using a LiftAid. Also remember to fix the safety line to the panel. Check that the required support width (min. 50 mm) is maintained. If required use extra supports. Using a builder's level, check that the panel is vertically aligned in all directions.

## Fixing of panels

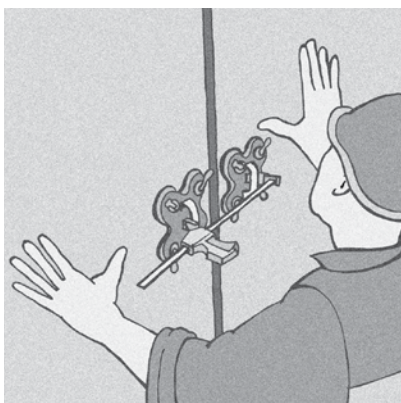
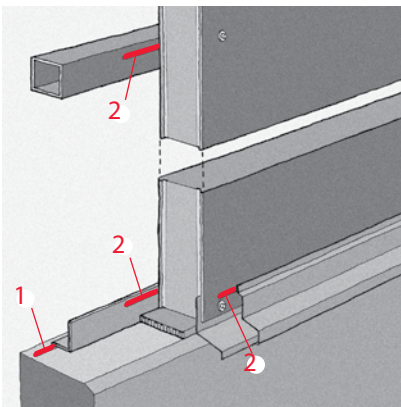
Fix the panel in the upper support structure and foundation profile. The screws must not be too tight. Leave the screws near the male joint open till the next panel is installed before tightening them. Use screwdriver or drilling machine with depth limiter. Lift the next panel in position and raise it upright. Use a quick grip and hand suction pads to press the panels together. At regular intervals, check that the panels are vertical.

## Insulation of panel ends

Use stone wool strip in the panel end joints.

## Sealing

Use sealing compound on the inside of the panel to seal screw holes and other cut-outs to maintain the vapour barrier function.



## NOTE!

- The safety instructions accompanying the LiftAids must be observed.
- Also remember to fix the safety line to the panel.
- Cover open wool surfaces of panels against rain and snow when finishing work for the day.

# WORK SAFETY

## Rain protector (PR-11)

The rain protector protects Paroc Panel System elements against rain water efficiently and quickly. The rain protector consists of a plastic foil with a plastic-treated magnetic band glued lengthwise on both sides. It is used for short-term protection.

## Clamping tool (TD-01)

The clamping tool allows for quick and efficient clamping together of Paroc Panel System elements in situations where the elements' own weight is insufficient to press together the element joints (e.g. for roof, ceiling and upright installations).

## Lift Aid HF 8-20

For horizontal installation of elements with a standard width of 1,200 mm (cannot be used for PAROC shadow or PAROC flex elements due to a different joint structure). Can be adjusted for 80 mm to 200 mm thick PAROC elements. Includes a safety line. Lifting capacity: 250 kg.

## Safety line

The safety line system with a magnetic clasp is developed for use with Paroc Panel System's lifting accessories LiftAid H and HFS.

## Cladboy

Cladboy works with suction pads, and is suitable for the vertical and horizontal installation of all Paroc elements. Lifting capacity with standard suction pads: 350 kg.

# Use and Maintenance

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**MAINTENANCE IN LINE WITH THE INSTRUCTIONS PROLONGS THE FUNCTIONING AND A LONGER SERVICE LIFE OF THE WHOLE BUILDING.**

**Paroc Panel System provides guidelines for using and maintaining buildings built with PAROC panels. The guidelines cover the following subjects**

## **Panels in use**

Suspending items on panels, making cut-outs and penetrations in panel structures and protecting load-bearing ceilings

## **Cleaning of panels**

Choosing the right methods and detergents to clean various panel surfaces

## **Painting and repair of panels**

Repairing damage, such as scratches and dents on panel coating or panel facings

## **Exchanging panels**

Instructions for more extensive damage. Includes step-by-step instructions.

Maintain the panels according to the guidelines to ensure a longer service life for the panels.



Download Use & Maintenance Guide here







FIRE PROOF PANELS



# PAROC

## Panel System

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PRODUCT BROCHURE